FIG. 1

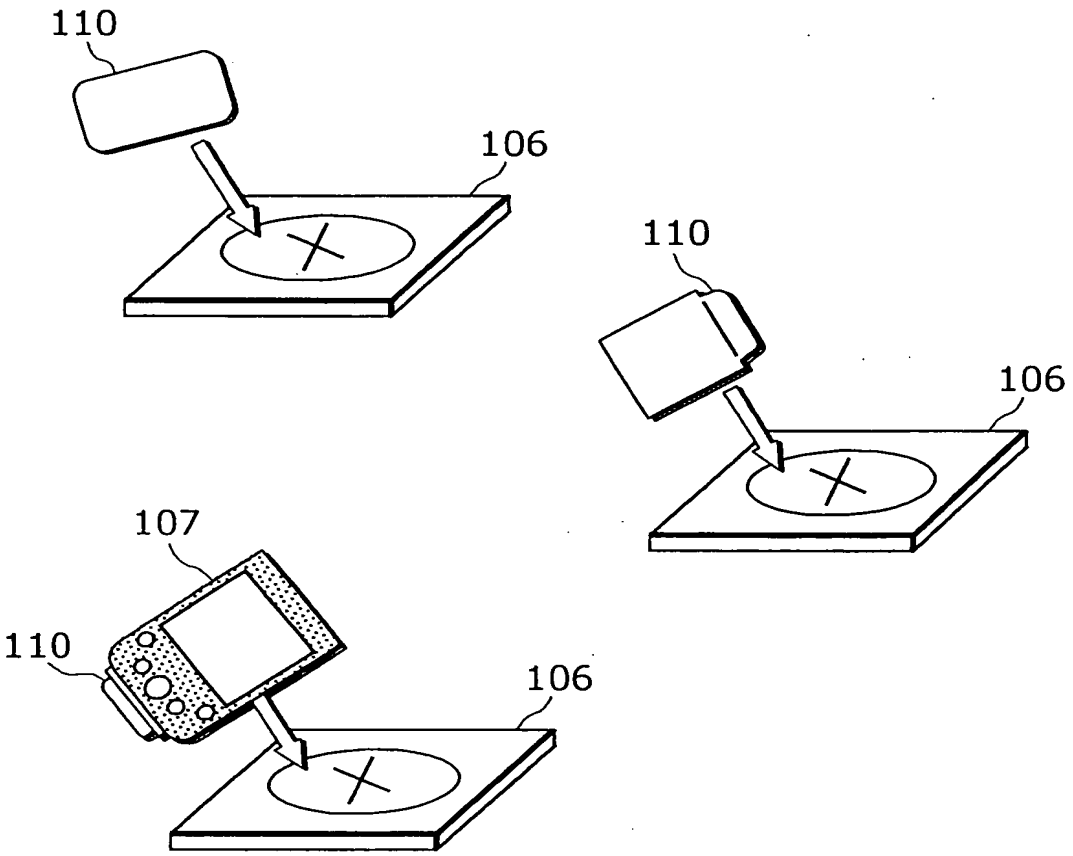


FIG. 2

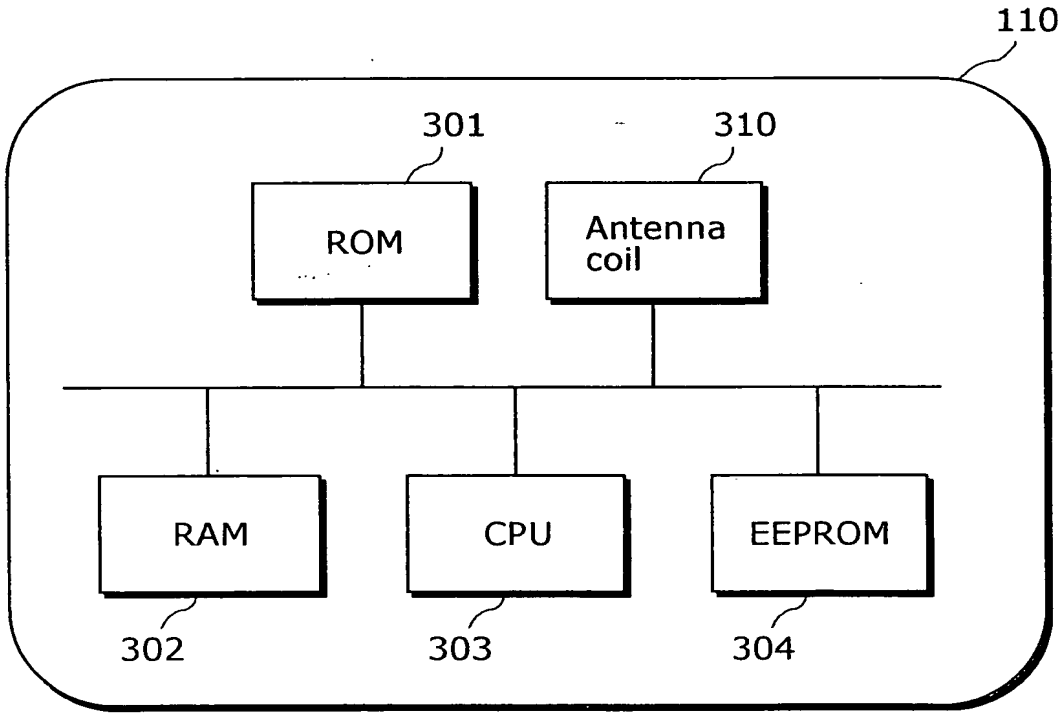


FIG. 3

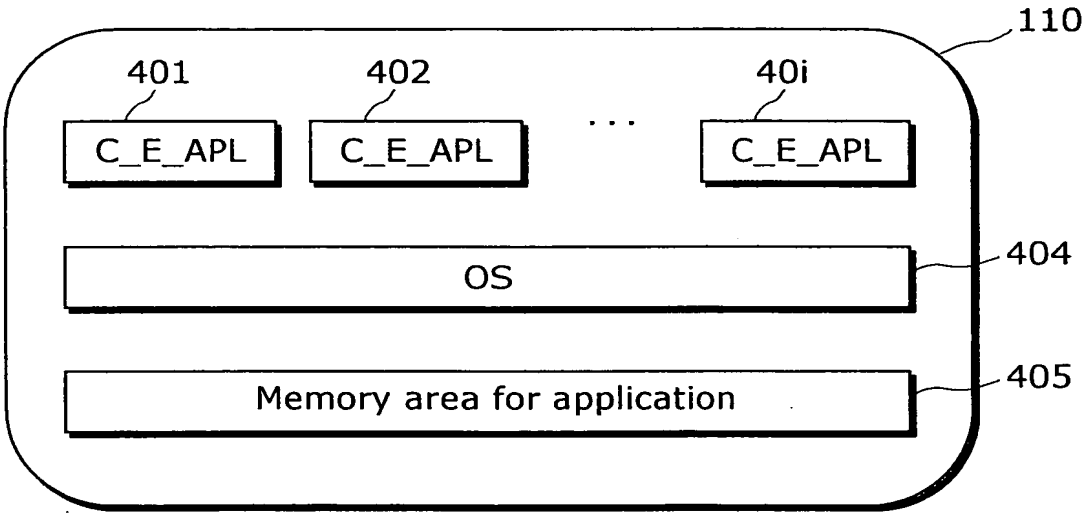

110
401
402
40i
C_E_APL
C_E_APL
C_E_APL
OS
404
Memory area for application
405

FIG. 4

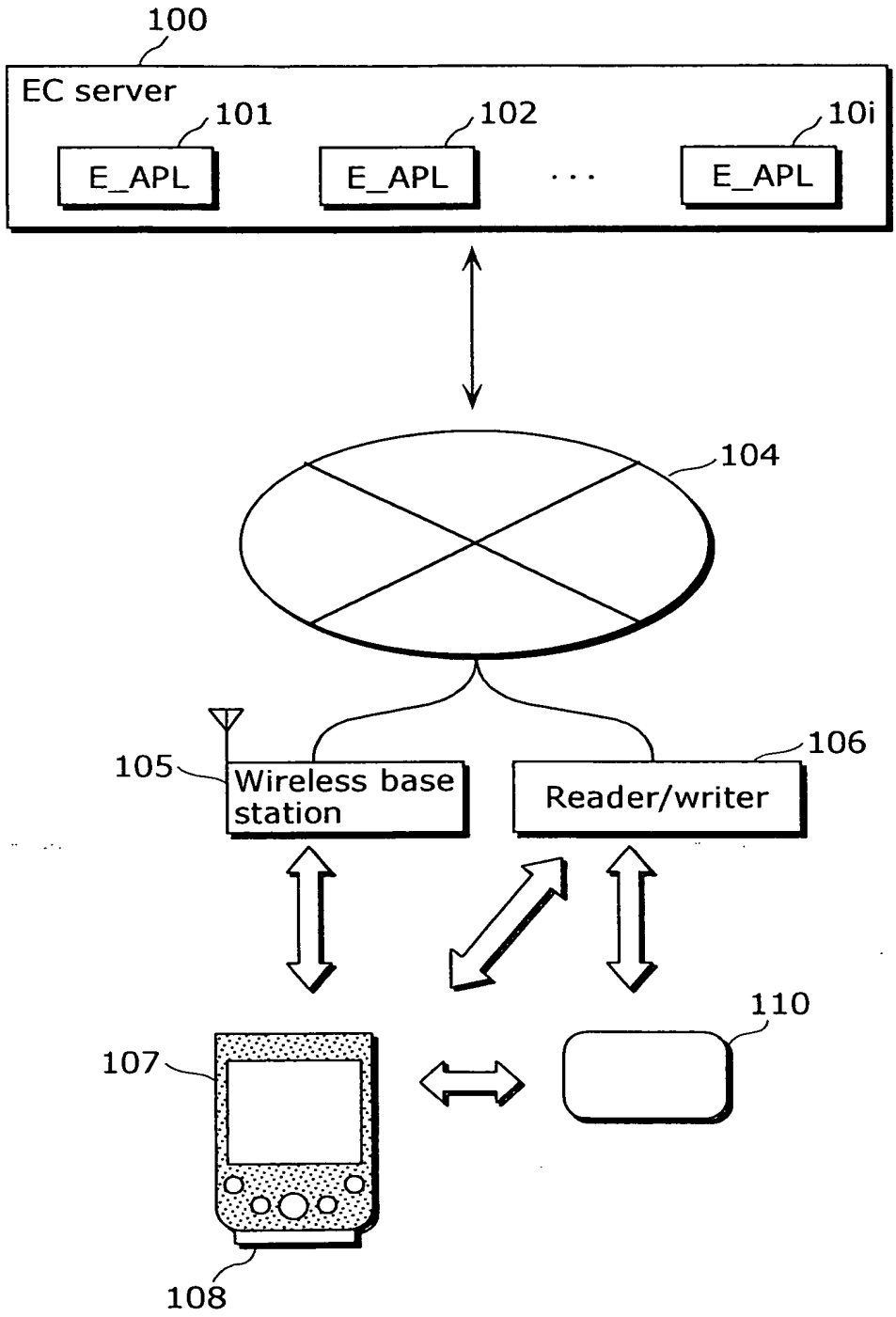

100
EC server
101
102
10i
E_APL
E_APL
E_APL
104
105
Wireless base station
106
Reader/writer
110
107
108

FIG. 5A

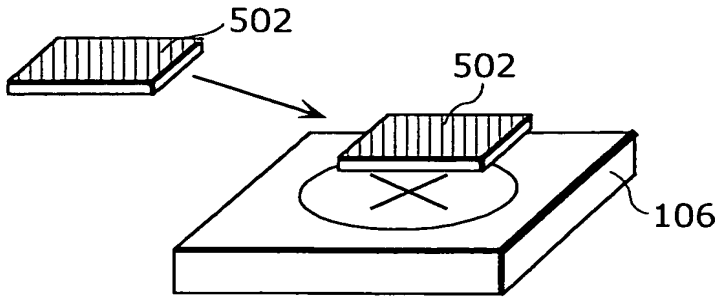


FIG. 5B

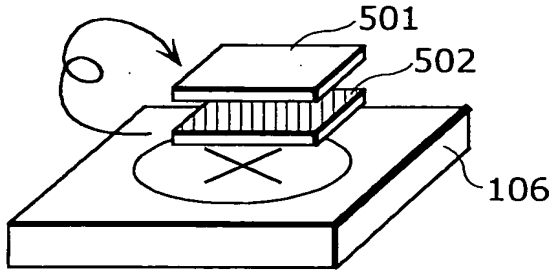


FIG. 5C

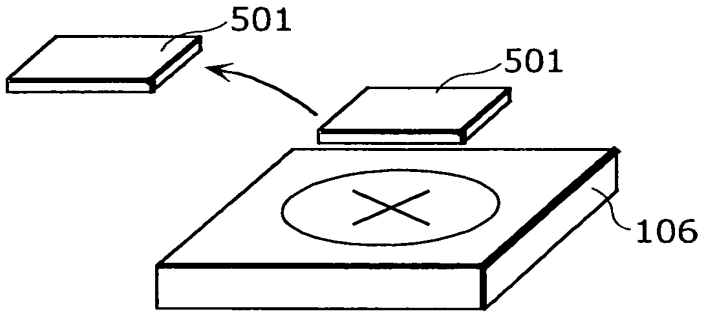


FIG. 5D

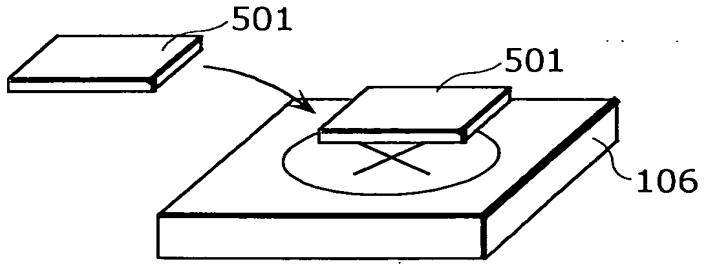


FIG. 5E

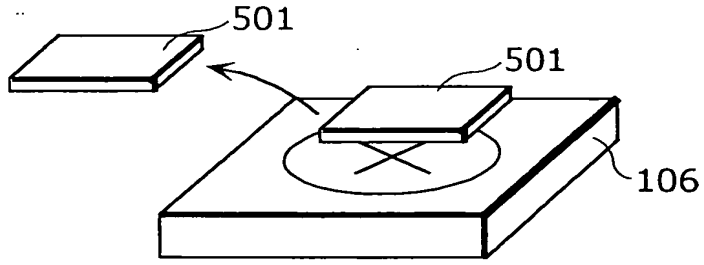


FIG. 6A

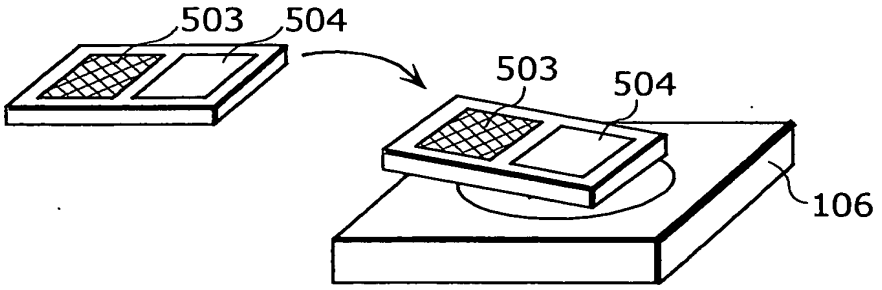


FIG. 6B

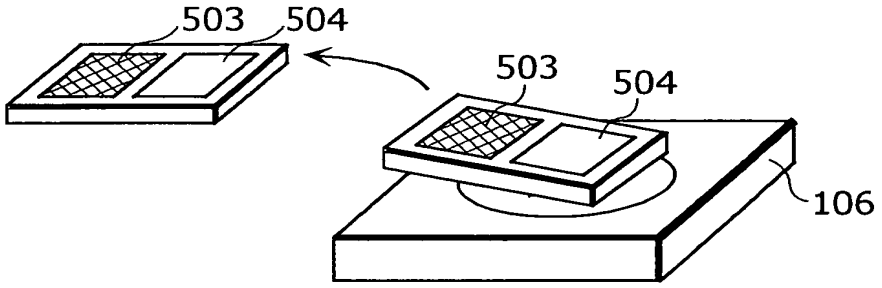


FIG. 6C

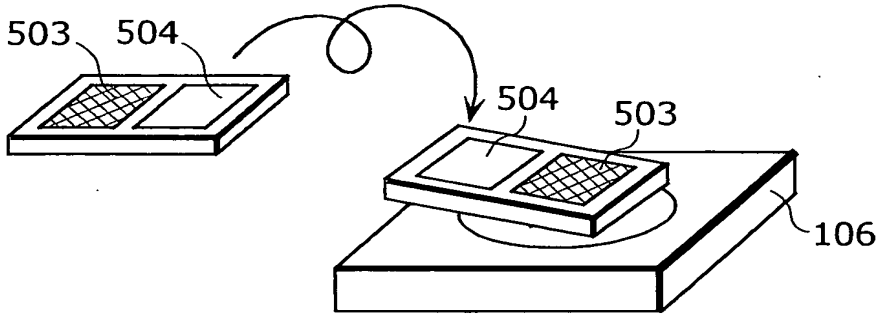


FIG. 6D

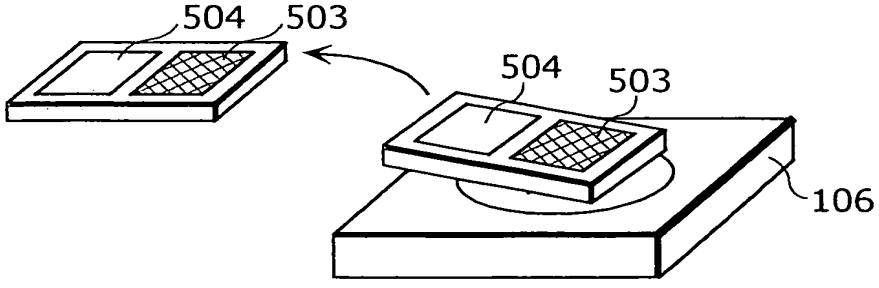


FIG. 7A

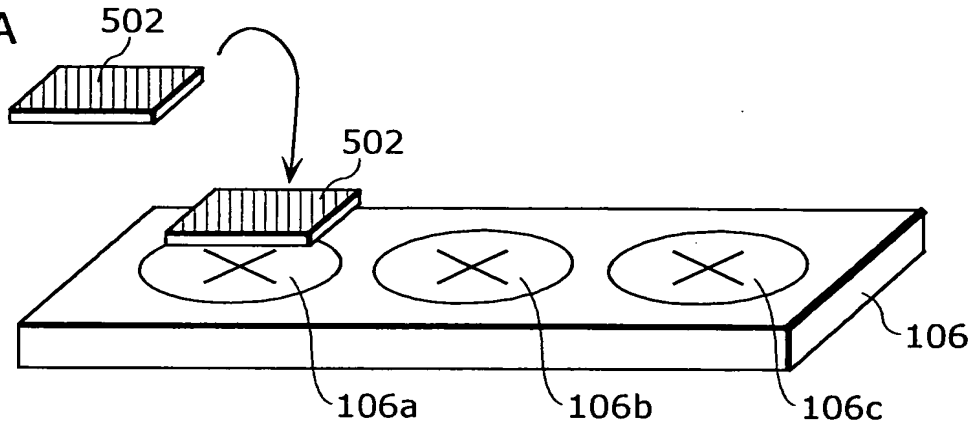


FIG. 7B

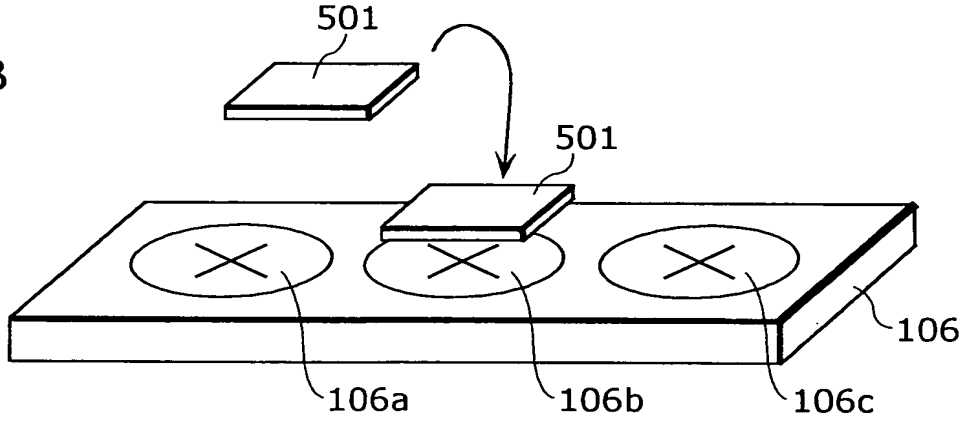


FIG. 7C

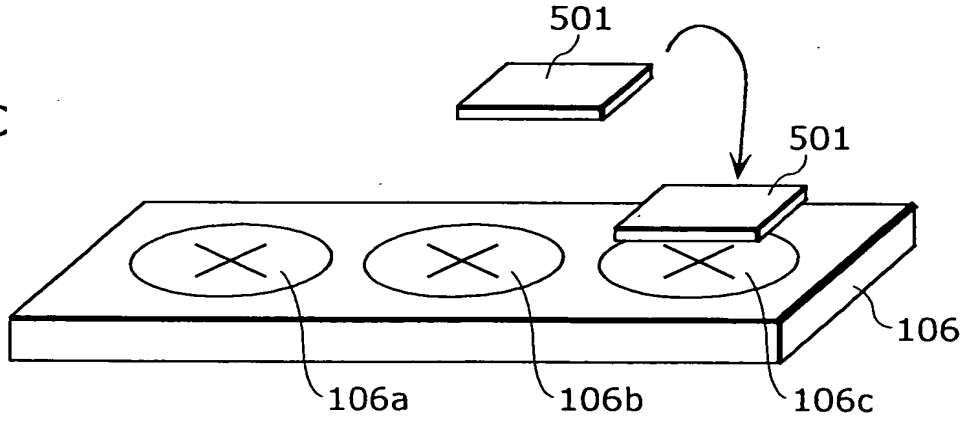


FIG. 8

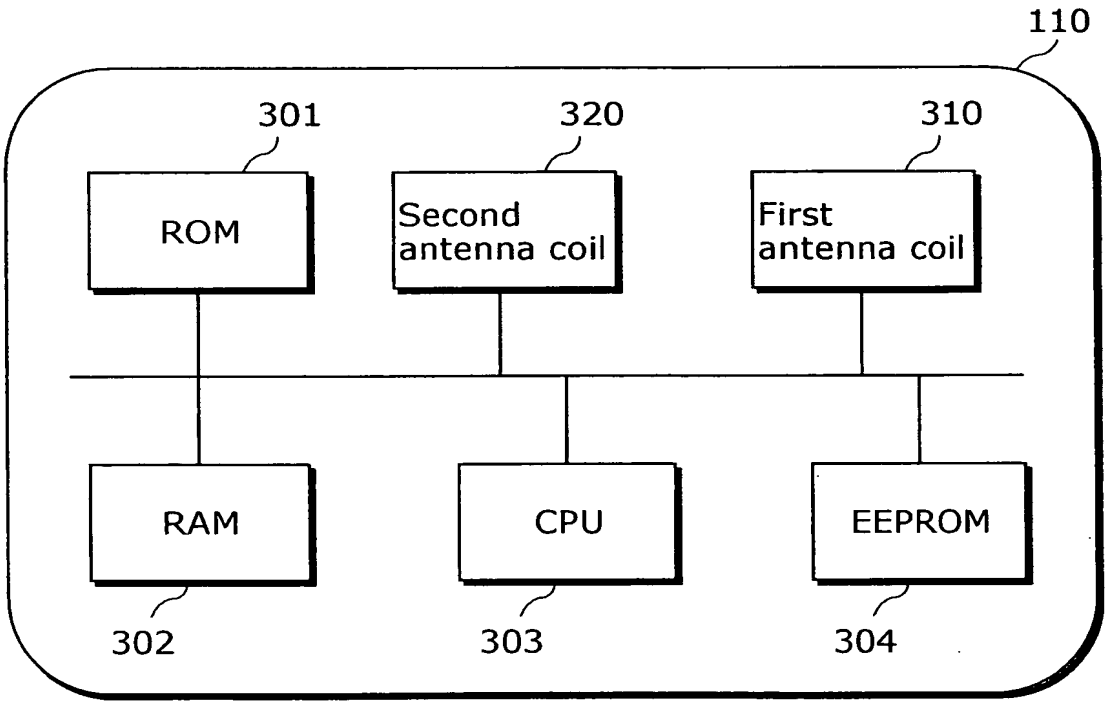

110
301
320
310
ROM
Second antenna coil
First antenna coil
RAM
CPU
EEPROM
302
303
304

FIG. 9

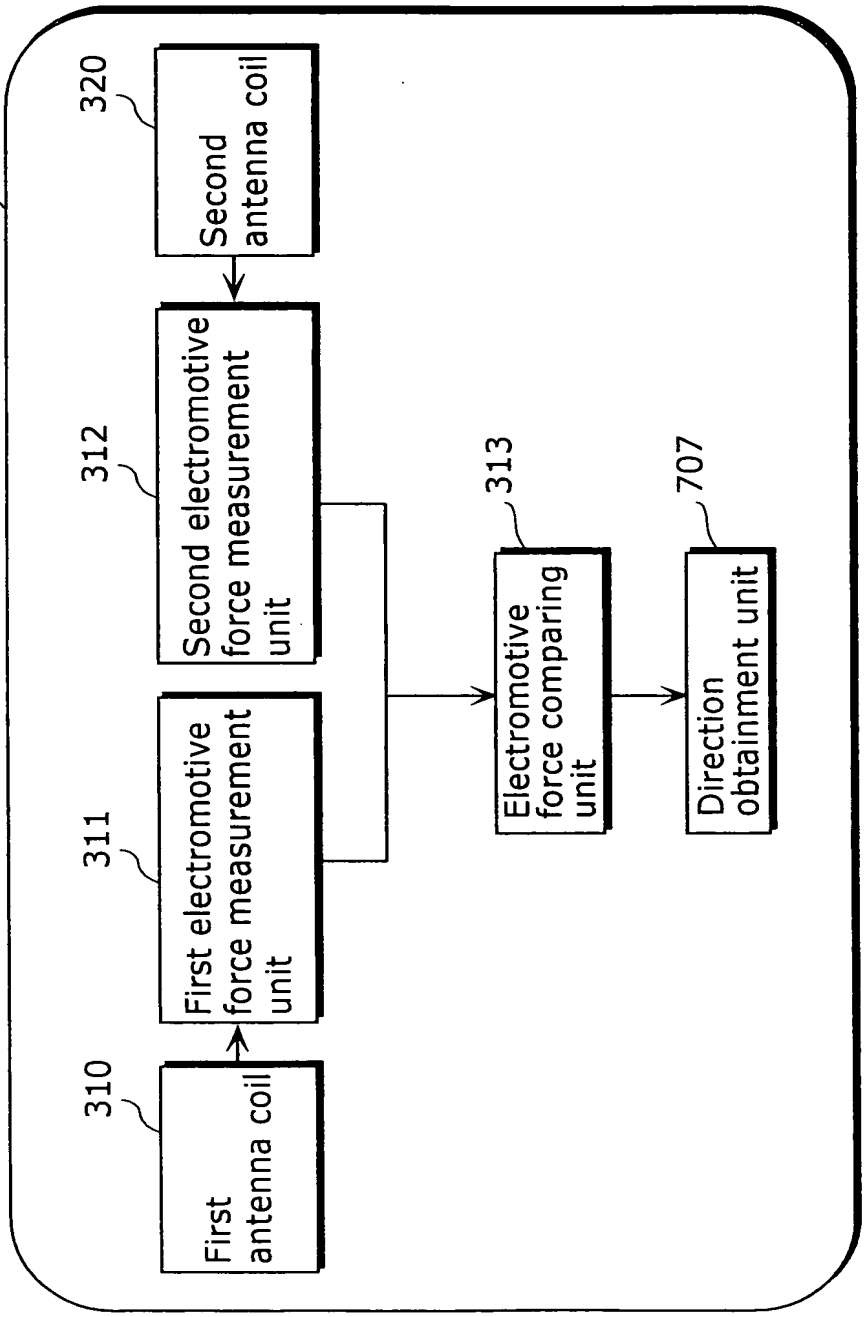

110
320
Second antenna coil
312
Second electromotive force measurement unit
313
707
311
First electromotive force measurement unit
Electromotive force comparing unit
Direction obtainment unit
310
First antenna coil

FIG. 10A

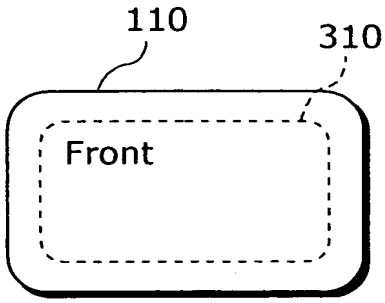


FIG. 10B

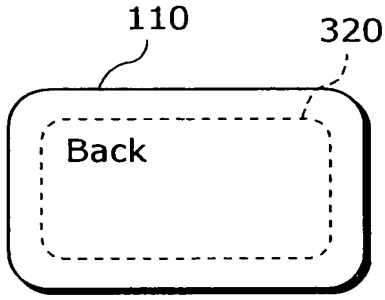


FIG. 10C

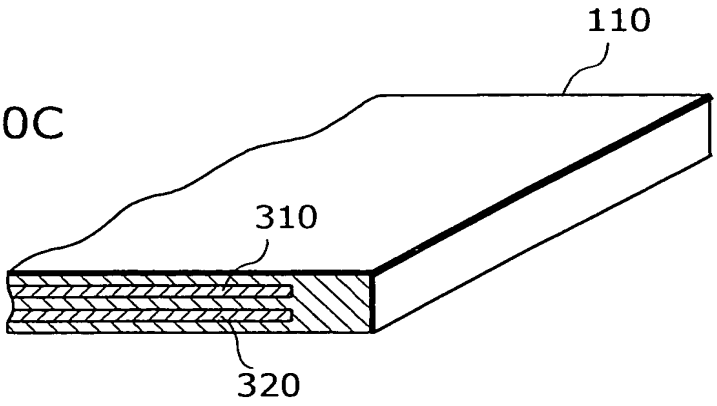


FIG. 11A

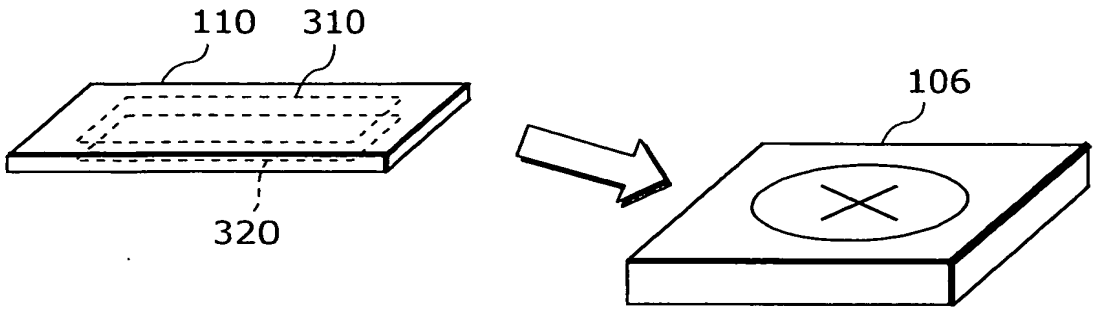


FIG. 11B

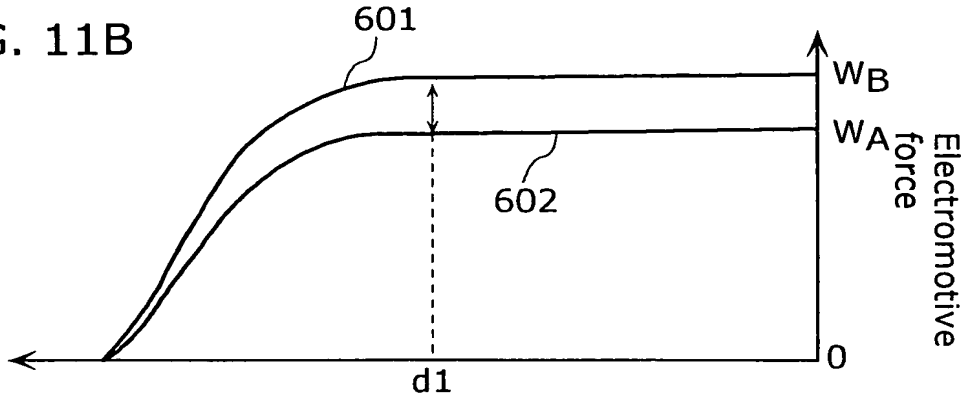


FIG. 11C

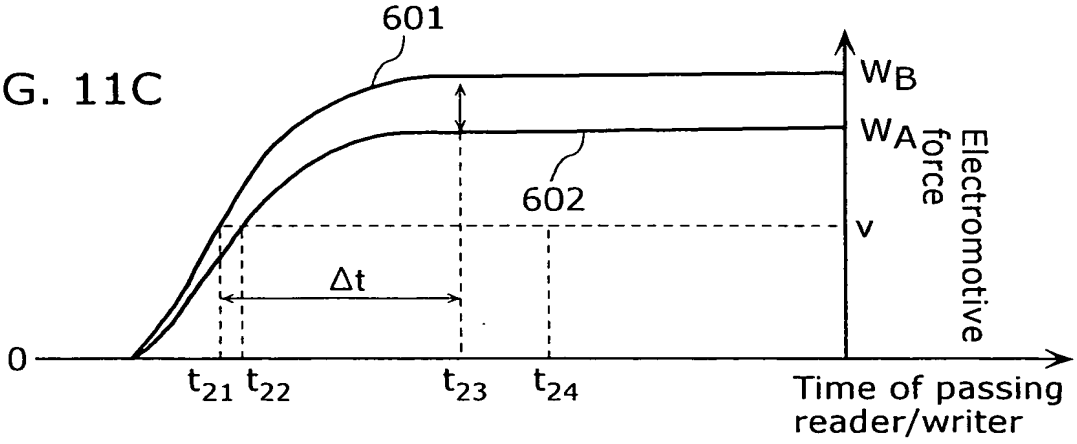


FIG. 12A

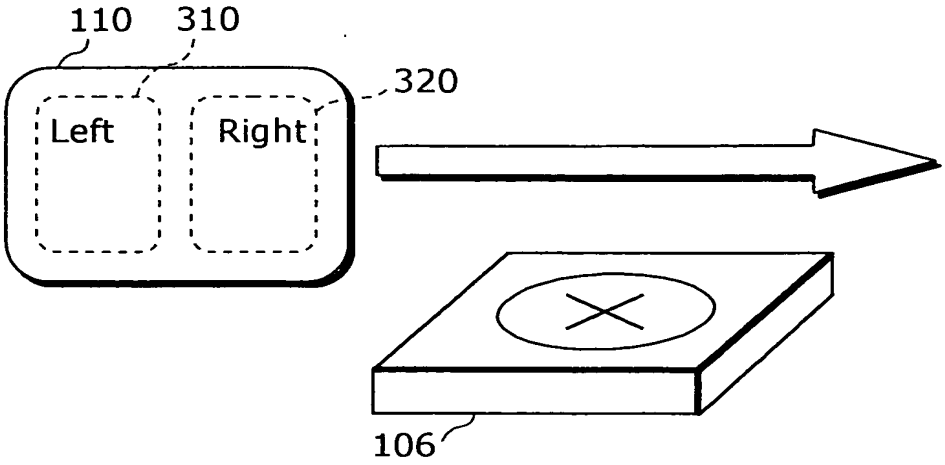


FIG. 12B

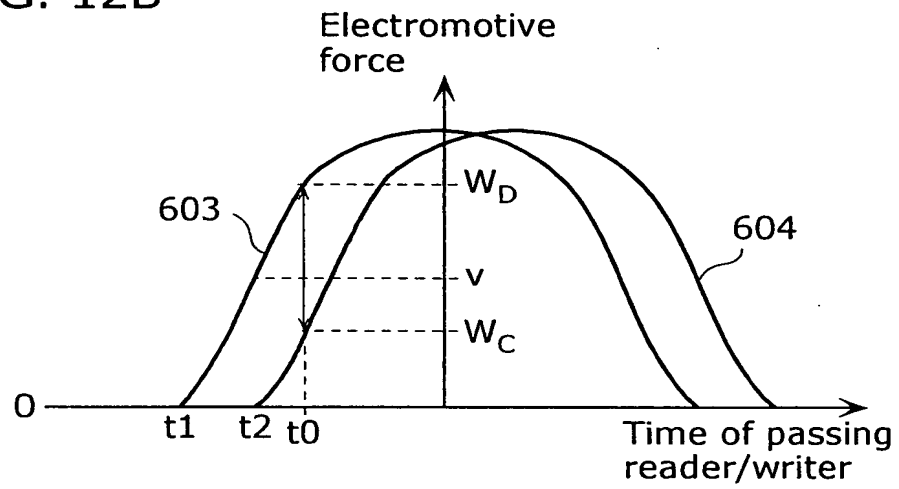


FIG. 12C

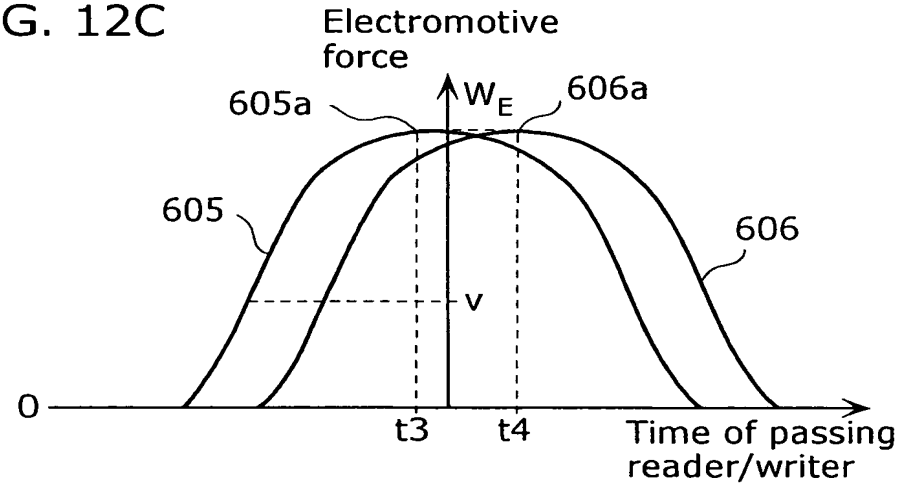


FIG. 13A

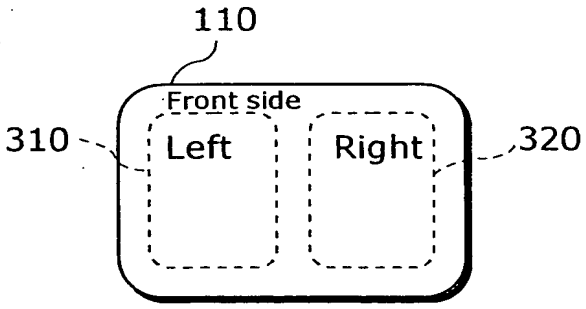


FIG. 13B

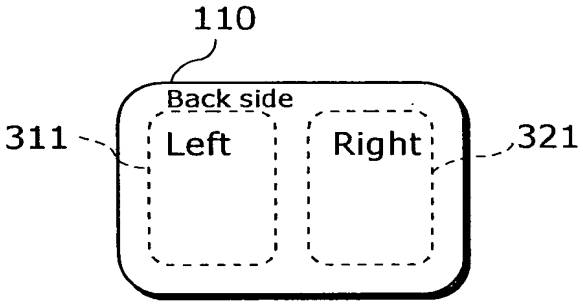
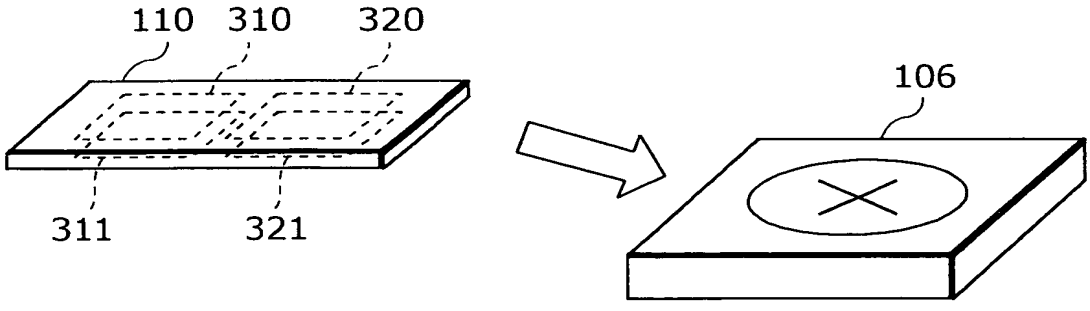


FIG. 13C



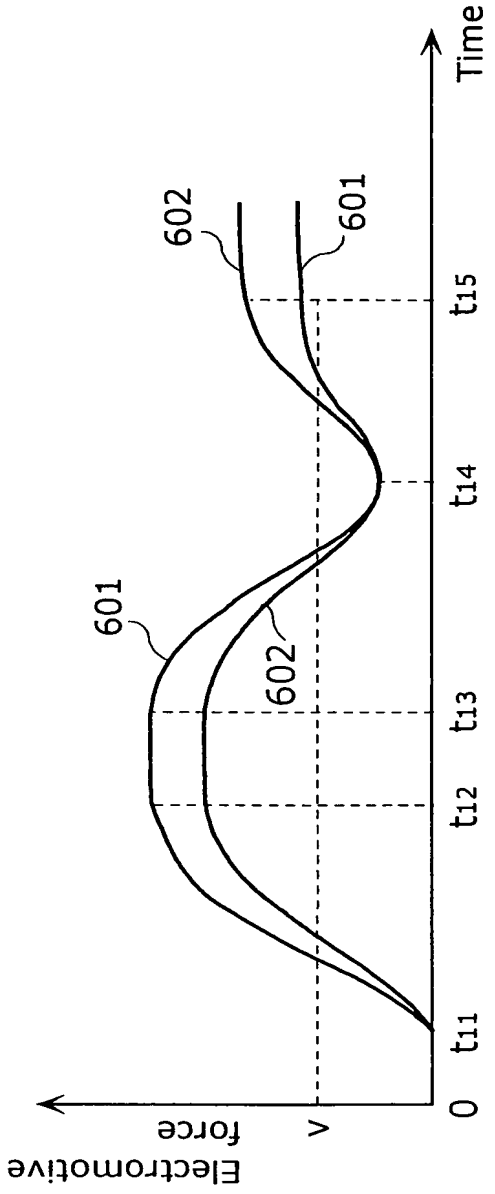


FIG. 14A

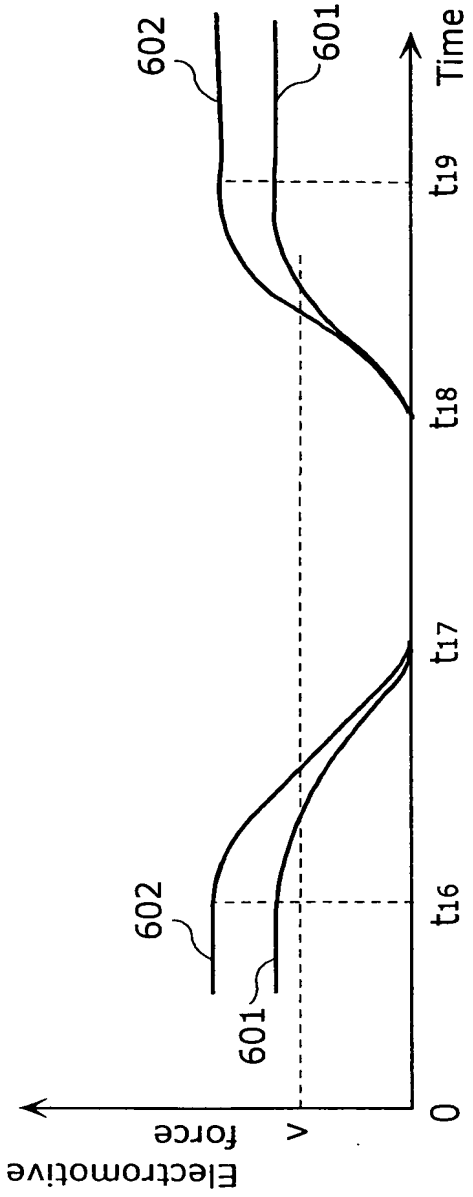


FIG. 14B

FIG. 15

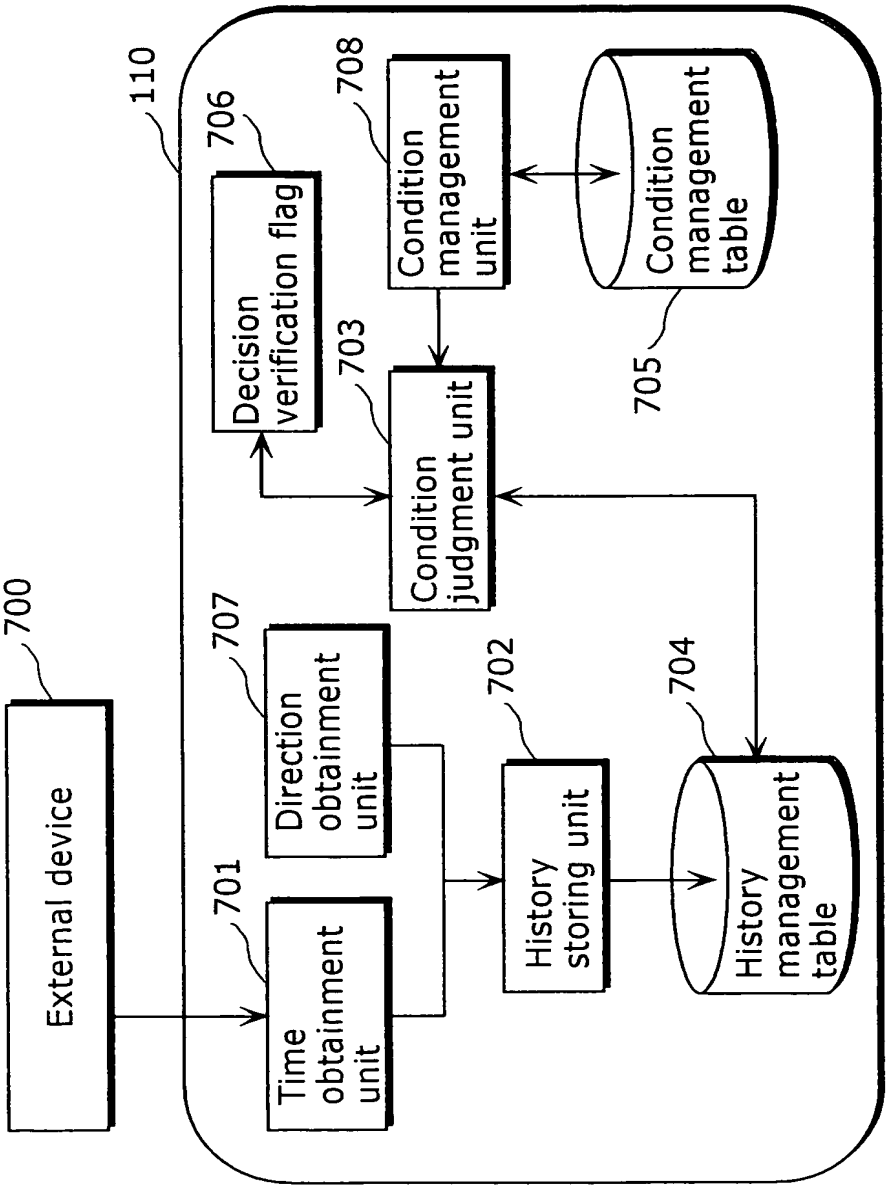

110
700
External device
701
Time obtainment unit
707
Direction obtainment unit
702
History storing unit
704
History management table
703
Condition judgment unit
706
Decision verification flag
708
Condition management unit
705
Condition management table

FIG. 16

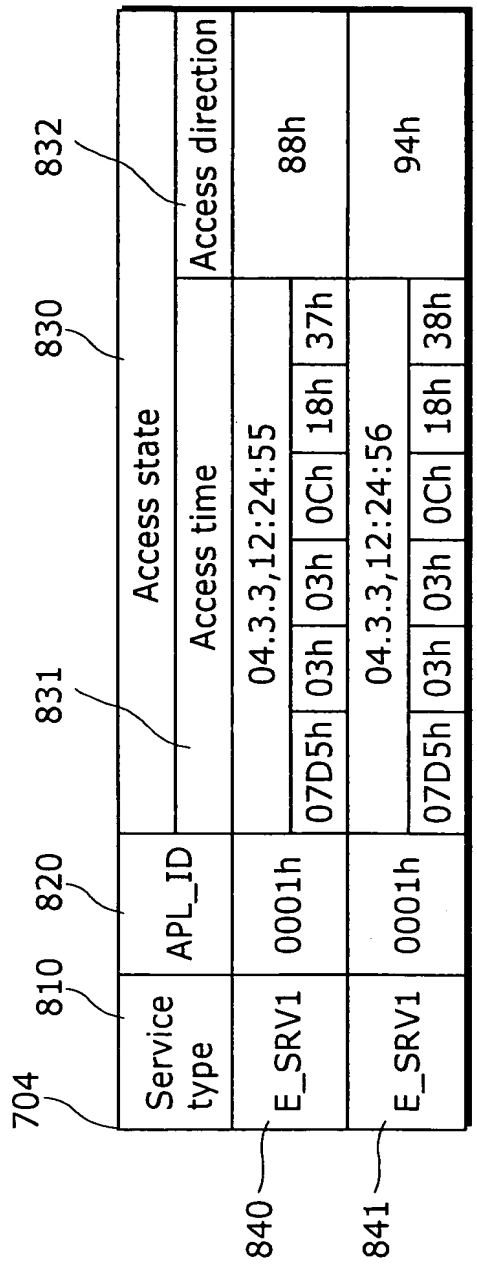
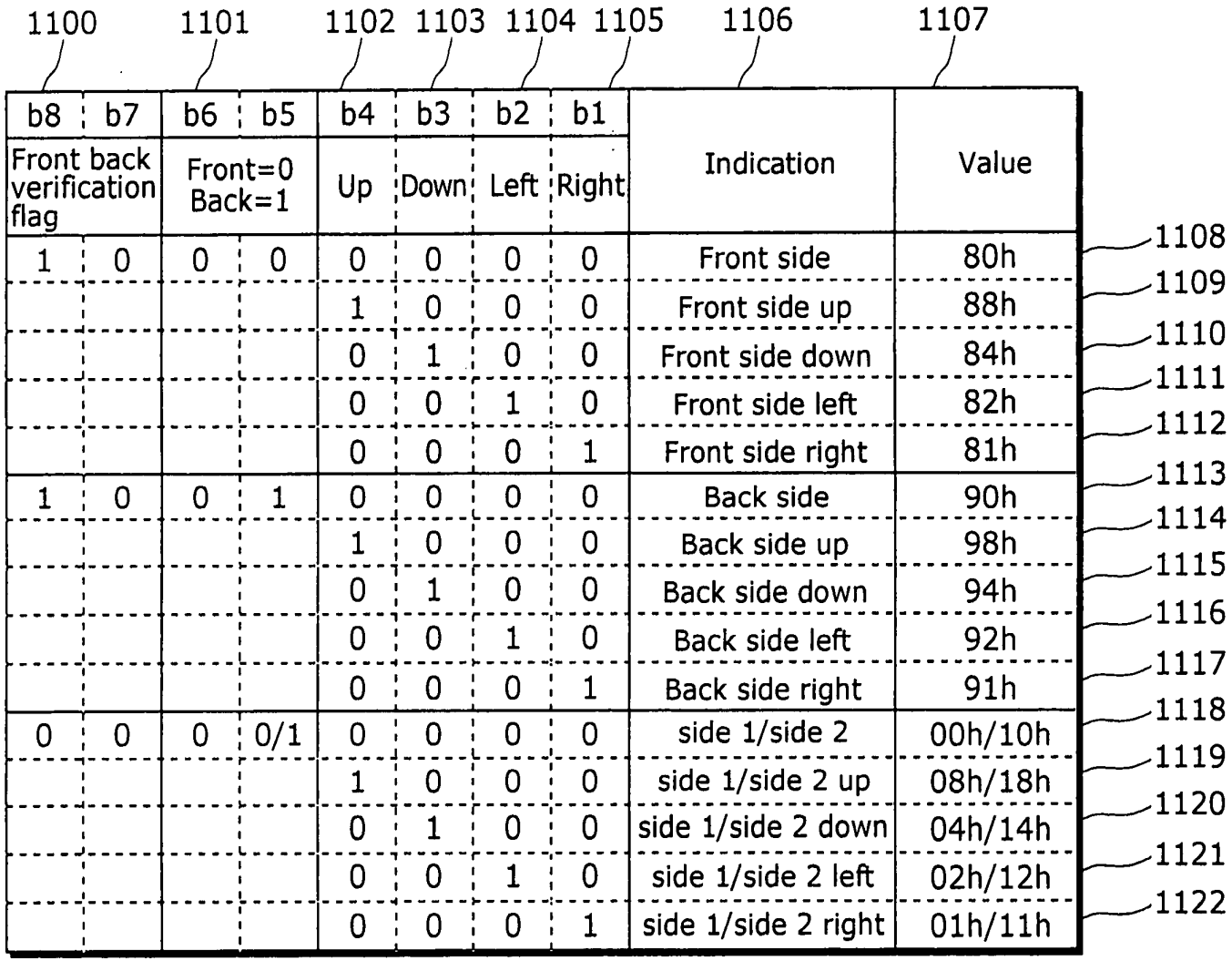

704
810
820
830
831
832
Service type
APL_ID
Access state
Access time
Access direction
E_SRV1
0001h
07D5h
03h
03h
0Ch
18h
37h
04.3.3,12:24:55
88h
840
E_SRV1
0001h
07D5h
03h
03h
0Ch
18h
38h
04.3.3,12:24:56
94h
841

FIG. 17



1100 b8	1100 b7	1101 b6	1101 b5	1102 b4	1103 b3	1104 b2	1105 b1	1106 Indication	1107 Value	
Front back verification flag		Front=0 Back=1		Up	Down	Left	Right			
1	0	0	0	0	0	0	0	Front side	80h	1108
				1	0	0	0	Front side up	88h	1109
				0	1	0	0	Front side down	84h	1110
				0	0	1	0	Front side left	82h	1111
				0	0	0	1	Front side right	81h	1112
1	0	0	1	0	0	0	0	Back side	90h	1113
				1	0	0	0	Back side up	98h	1114
				0	1	0	0	Back side down	94h	1115
				0	0	1	0	Back side left	92h	1116
				0	0	0	1	Back side right	91h	1117
0	0	0	0/1	0	0	0	0	side 1/side 2	00h/10h	1118
				1	0	0	0	side 1/side 2 up	08h/18h	1119
				0	1	0	0	side 1/side 2 down	04h/14h	1120
				0	0	1	0	side 1/side 2 left	02h/12h	1121
				0	0	0	1	side 1/side 2 right	01h/11h	1122

FIG. 18

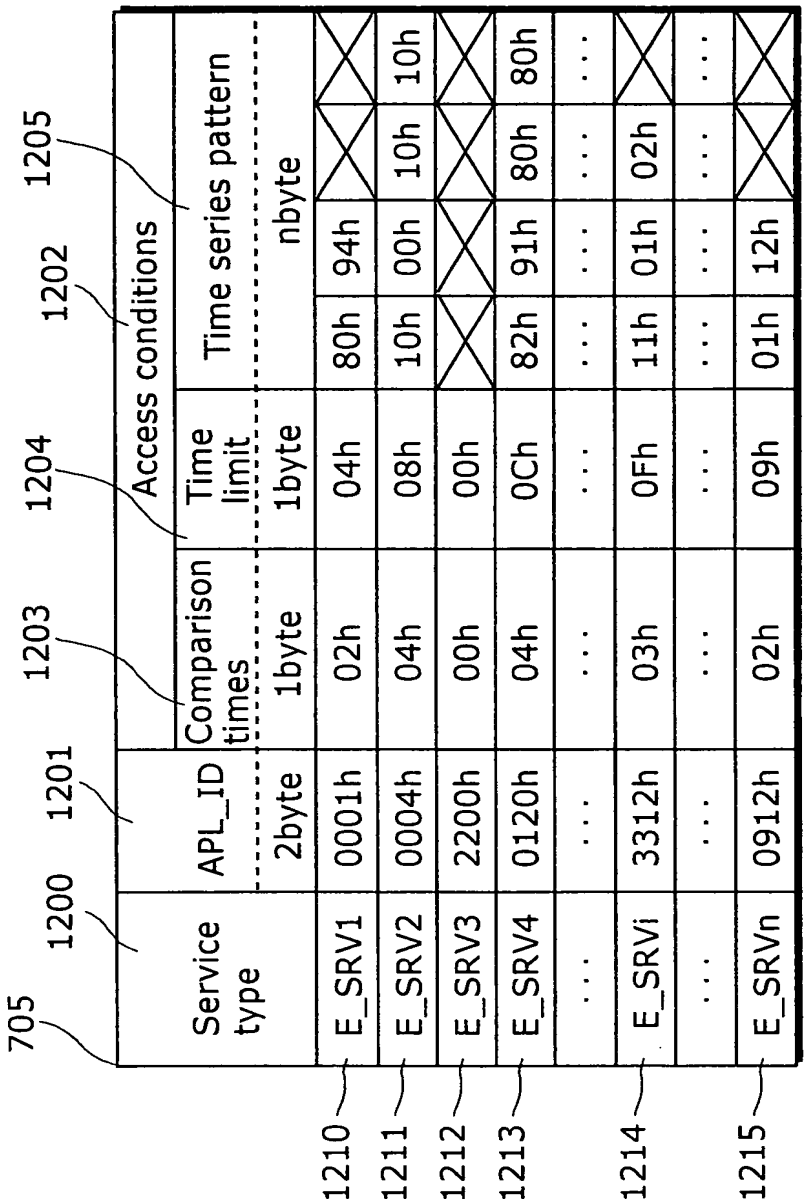

705
1200
1201
1203
1204
1202
1205
Service type
APL_ID
2byte
Comparison times
1byte
Access conditions
Time limit
1byte
Time series pattern
nbyte
1210
1211
1212
1213
1214
1215
E_SRV1
0001h
02h
04h
80h
94h
E_SRV2
0004h
04h
08h
10h
00h
10h
10h
E_SRV3
2200h
00h
00h
E_SRV4
0120h
04h
0Ch
82h
91h
80h
80h
E_SRVi
3312h
03h
0Fh
11h
01h
02h
E_SRVn
0912h
02h
09h
01h
12h

FIG. 19

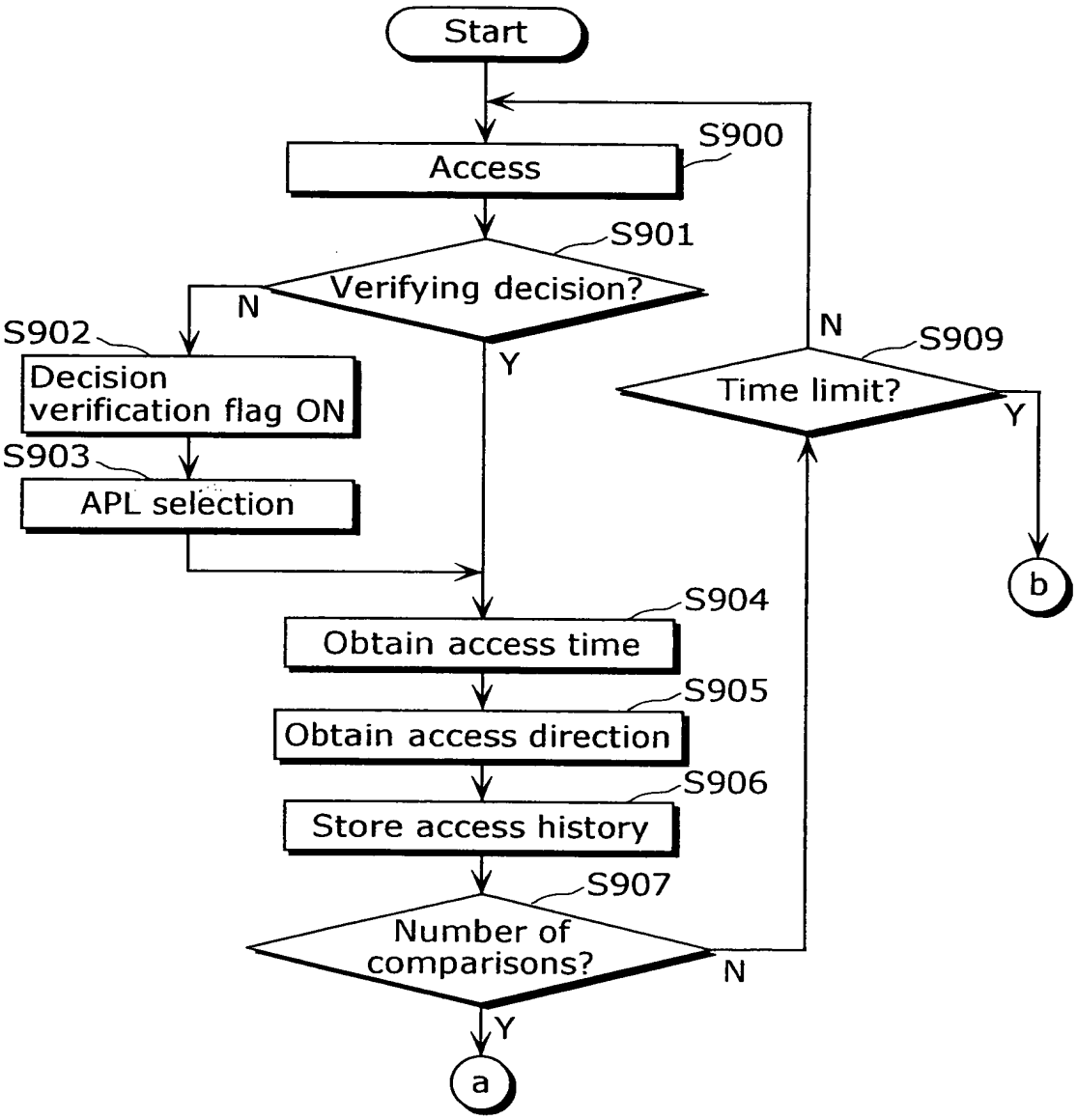

Start
Access
S900
Verifying decision?
S901
N
Y
S902
Decision verification flag ON
S903
APL selection
Time limit?
S909
N
Y
b
Obtain access time
S904
Obtain access direction
S905
Store access history
S906
Number of comparisons?
S907
N
Y
a

FIG. 20

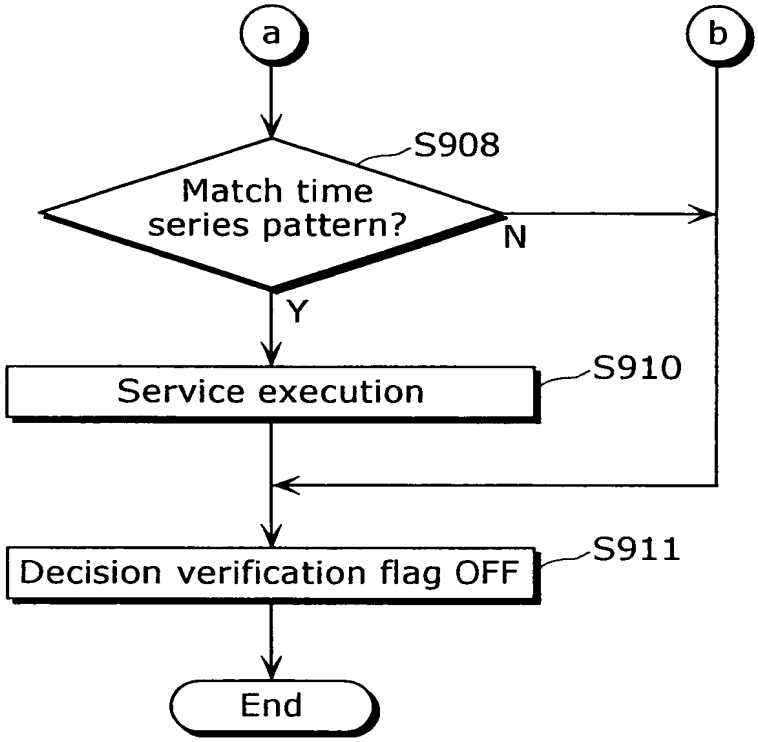

a
b
S908
Match time series pattern?
N
Y
Service execution
S910
Decision verification flag OFF
S911
End

FIG. 21

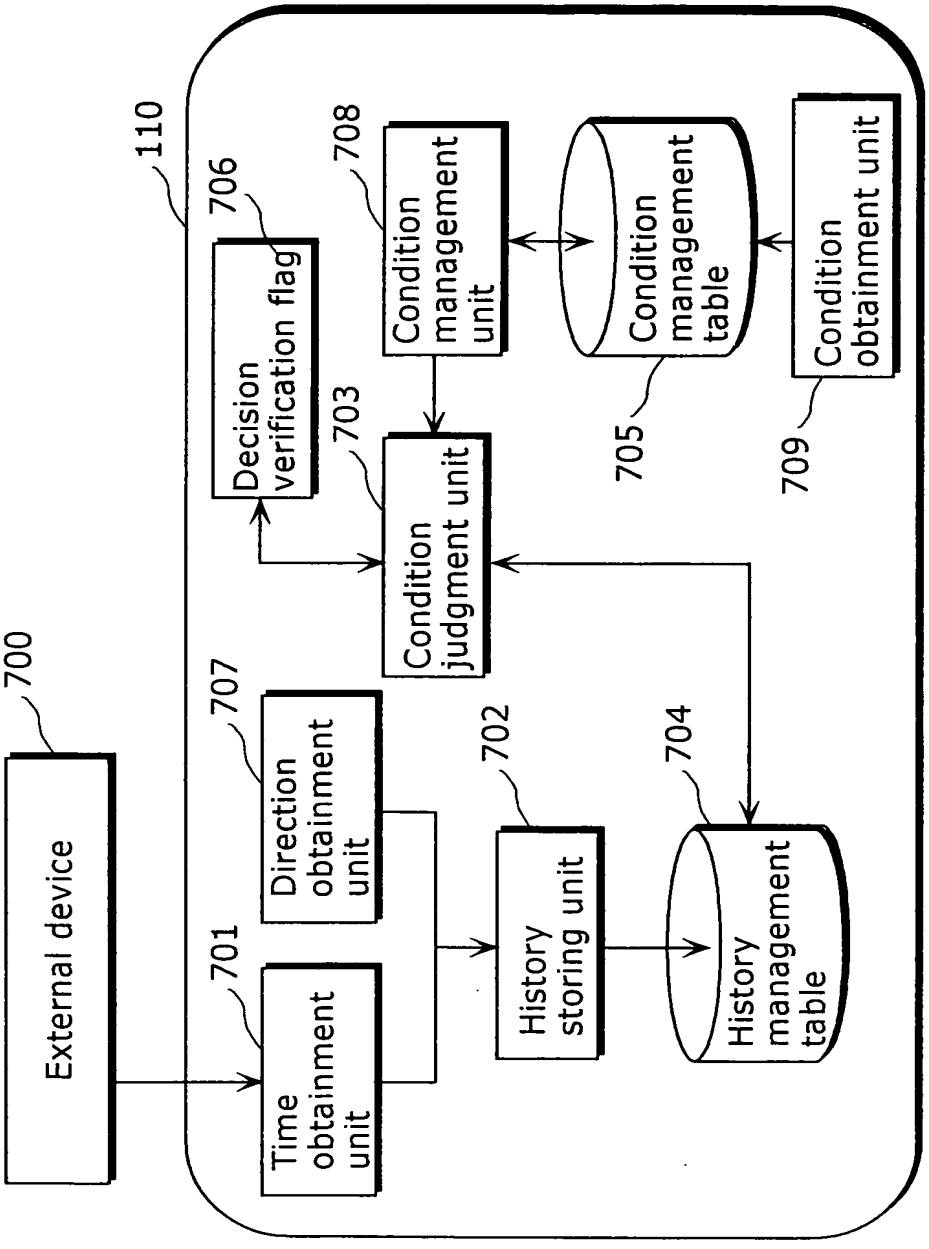

110
700
External device
701
Time obtainment unit
707
Direction obtainment unit
706
Decision verification flag
703
Condition judgment unit
708
Condition management unit
705
Condition management table
709
Condition obtainment unit
702
History storing unit
704
History management table

FIG. 22

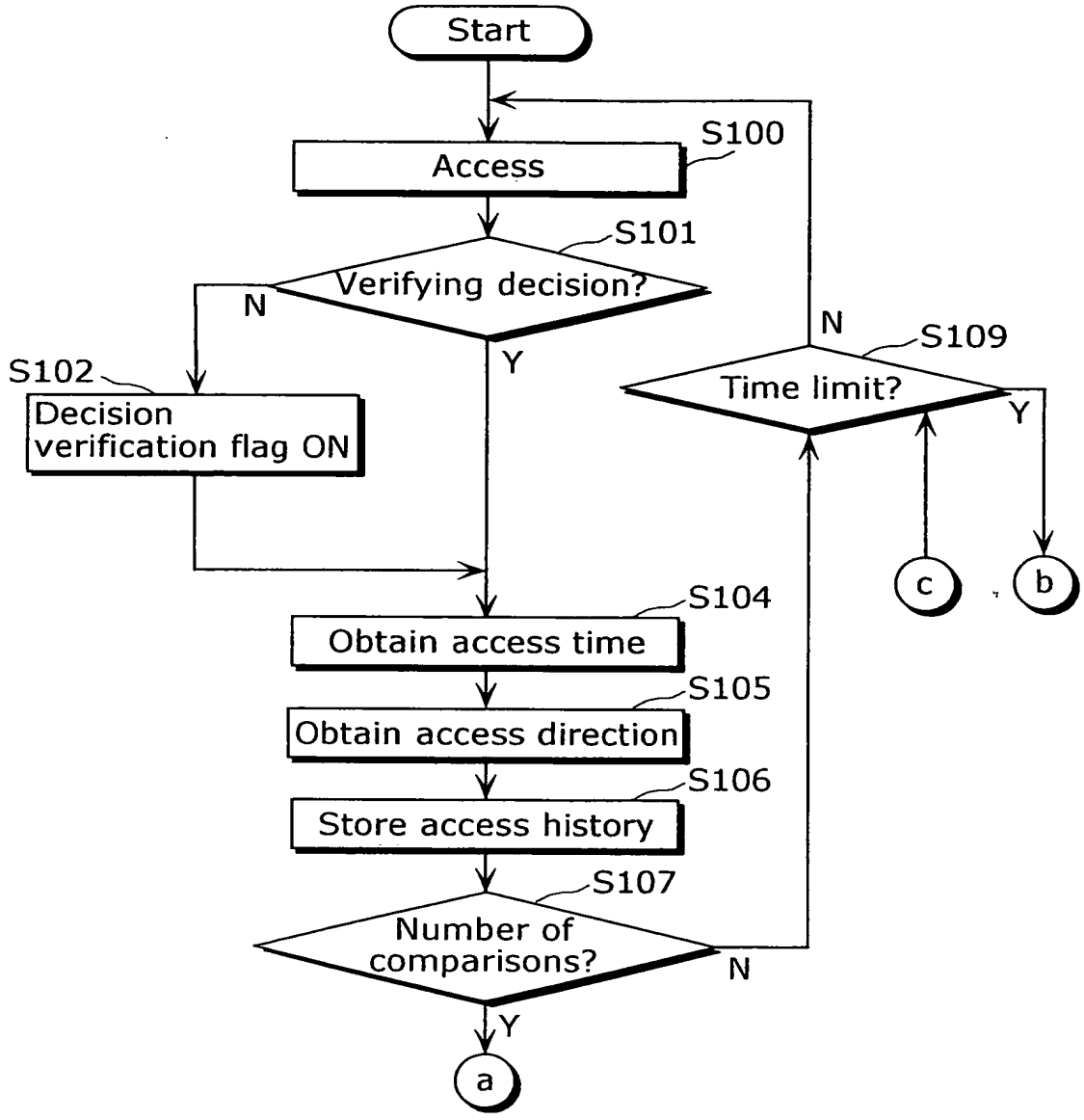

Start
S100
Access
S101
Verifying decision?
N
Y
S102
Decision verification flag ON
N
S109
Time limit?
Y
c
b
S104
Obtain access time
S105
Obtain access direction
S106
Store access history
S107
Number of comparisons?
N
Y
a

FIG. 23

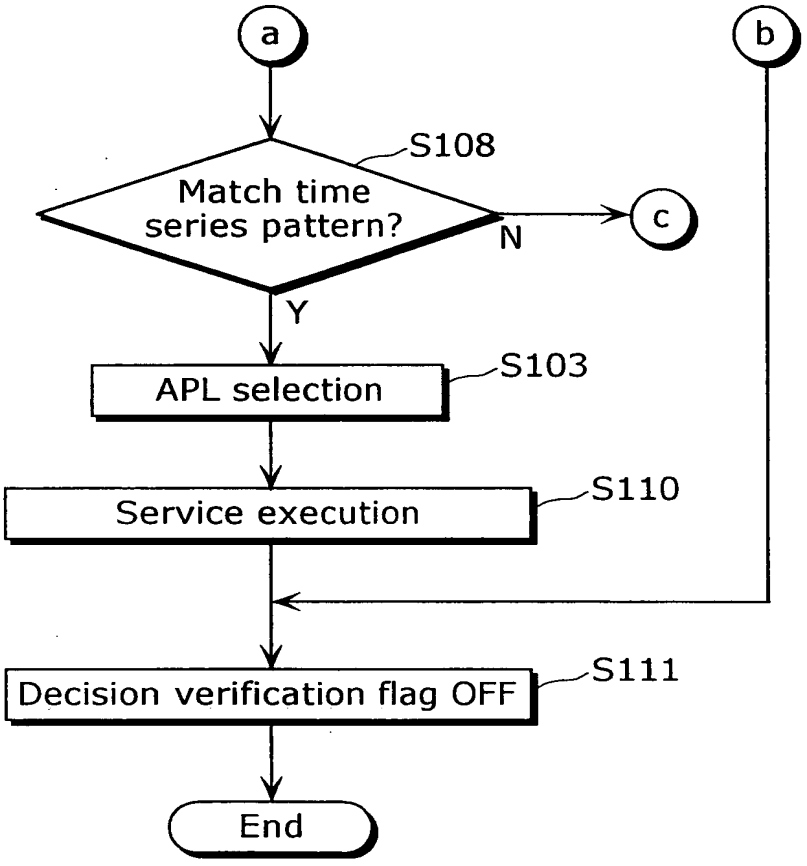

a
b
S108
Match time series pattern?
N
c
Y
APL selection
S103
Service execution
S110
Decision verification flag OFF
S111
End

FIG. 24

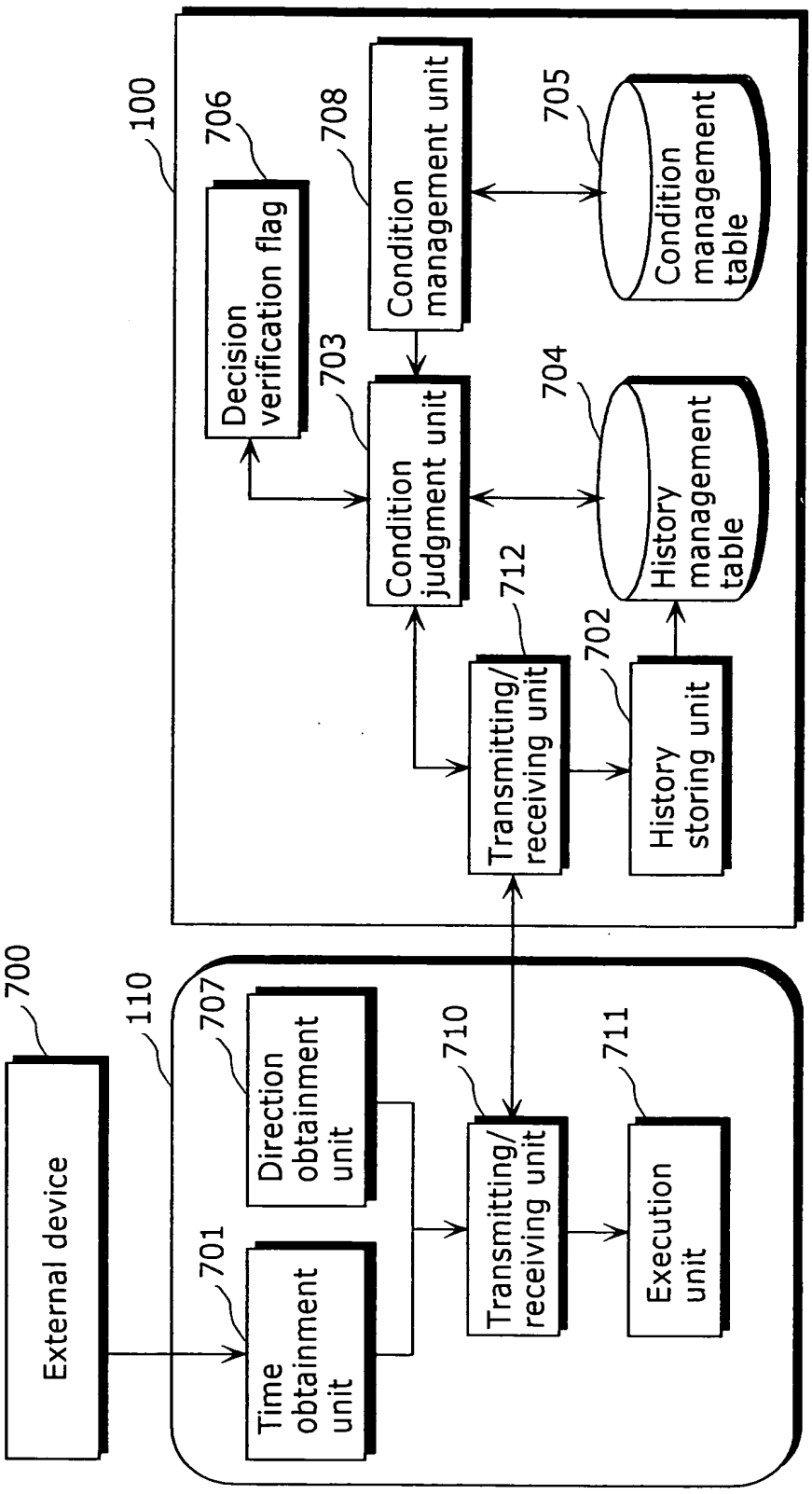

700
External device
110
701
Time obtainment unit
707
Direction obtainment unit
710
Transmitting/ receiving unit
711
Execution unit
100
706
Decision verification flag
708
Condition management unit
705
Condition management table
703
Condition judgment unit
704
History management table
712
Transmitting/ receiving unit
702
History storing unit

FIG. 25

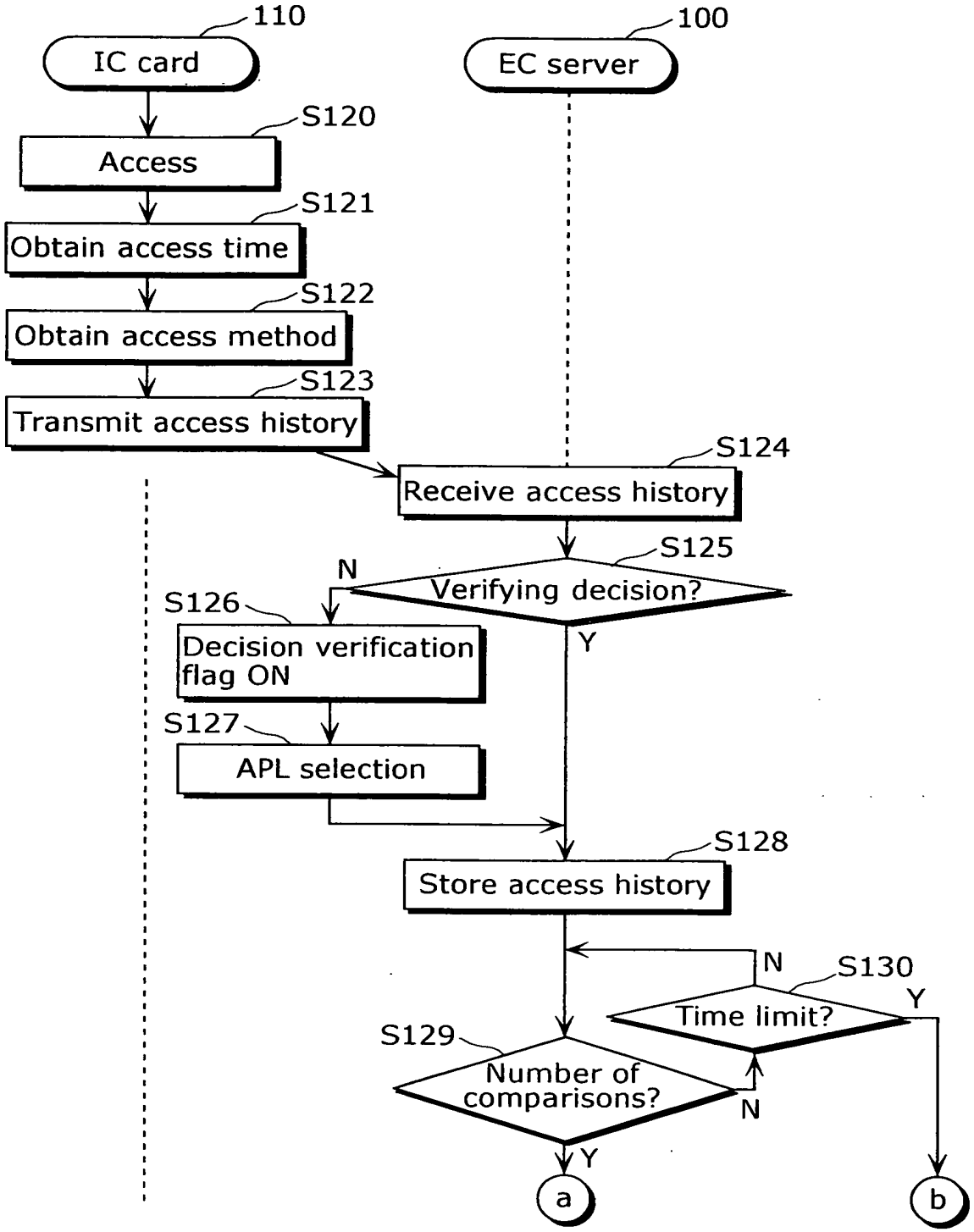

110
IC card
100
EC server
S120
Access
S121
Obtain access time
S122
Obtain access method
S123
Transmit access history
S124
Receive access history
S125
Verifying decision?
N
Y
S126
Decision verification flag ON
S127
APL selection
S128
Store access history
N
S130
Time limit?
Y
S129
Number of comparisons?
N
Y
a
b

FIG. 26

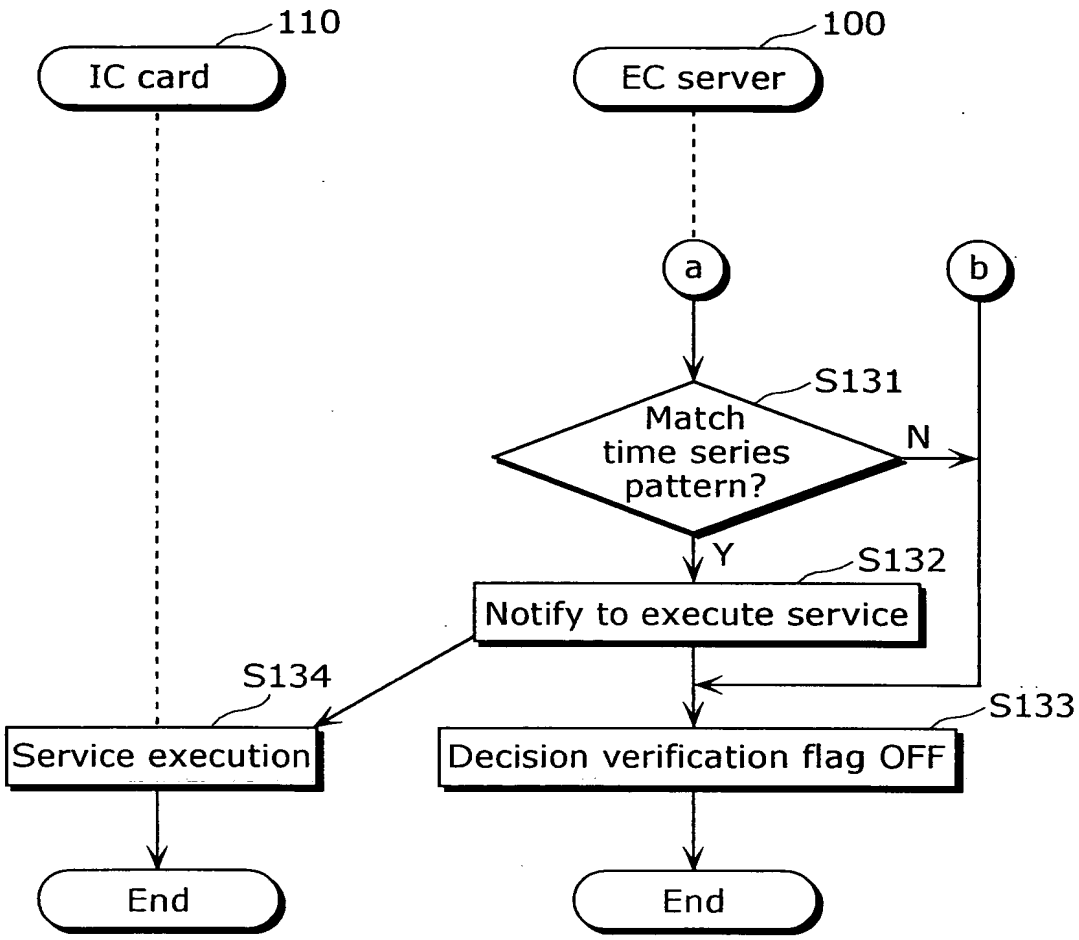
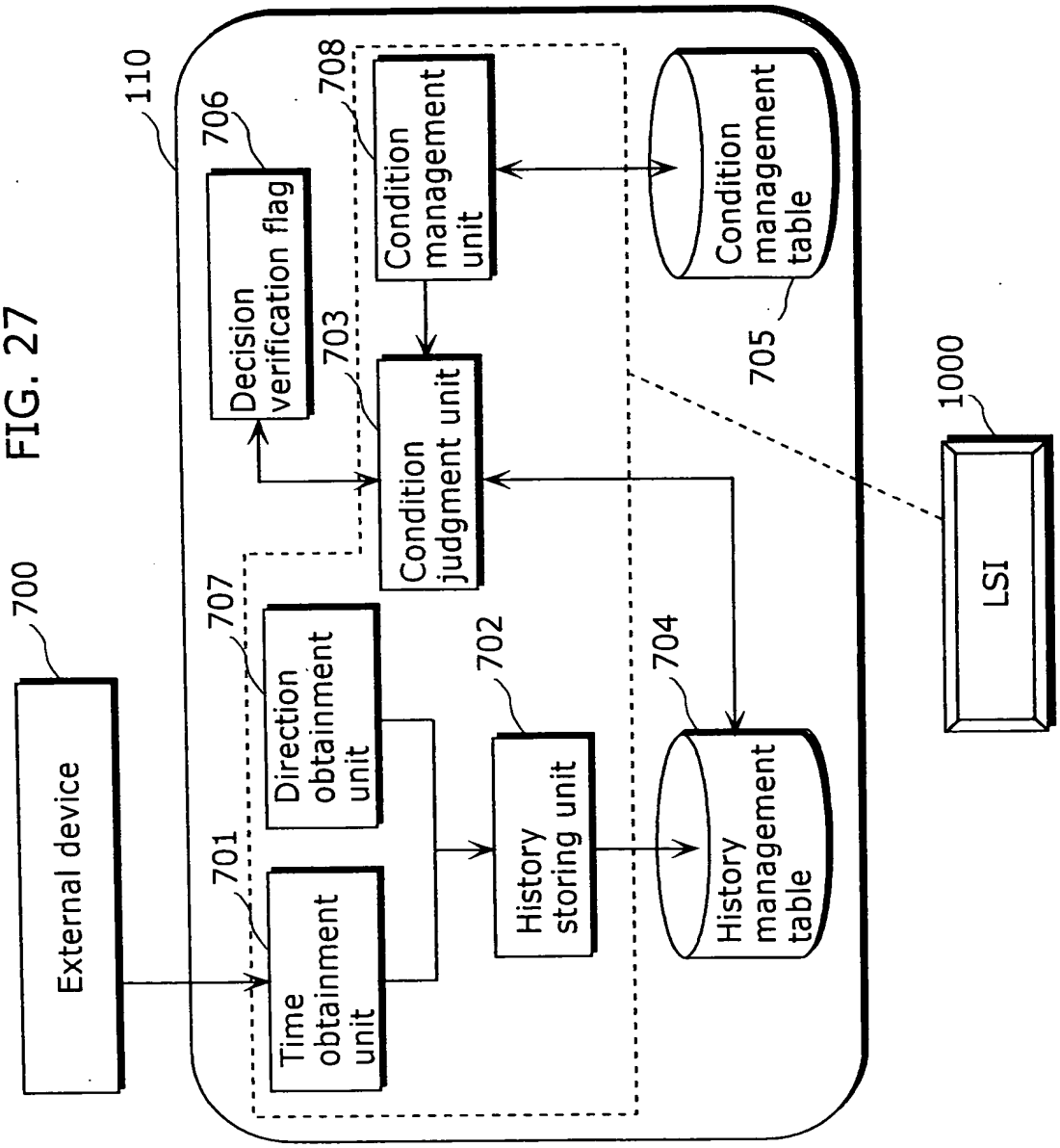

110
IC card
100
EC server
a
b
S131
Match time series pattern?
N
Y
S132
Notify to execute service
S134
S133
Service execution
Decision verification flag OFF
End
End

FIG. 27


110
706
Decision verification flag
708
Condition management unit
Condition management table
705
703
Condition judgment unit
1000
LSI
700
External device
707
Direction obtainment unit
702
History storing unit
704
History management table
701
Time obtainment unit